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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT	PAPER NUMBER
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4

DATE MAILED:

06/00/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/647,479

Applicant(s)
Meyrick et al.

Examiner
Callie Shosho

Art Unit
1714



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 6 disclose that the polyurethane has a "Mw". The scope of the claim is confusing because it is not clear if "Mw" represents molecular weight or weight average molecular weight. In light of the disclosure on page 1, lines 32-33 of the present specification, it is clear that the latter is true. Thus, it is suggested that in claims 1 and 6, "Mw" is changed to "weight average molecular weight".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 732381 alone, or alternatively, in view of either Yang (U.S. 5,825,391) or Lent et al. (U.S. 5,837,042).

EP 732381 disclose an ink jet ink composition comprising greater than 1-50% water-dissipatable polyurethane obtained from reaction of diisocyanate and polyol, water, 2-20%

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colorant including dye, 0.1-10% water-miscible organic solvent, and water-immiscible organic solvent. It is further disclosed that the ink is filtered through a filter which has pore size less than 1 μm . There is also disclosed a method wherein the above ink is jetted onto a substrate using an ink jet printer (page 2, lines 50-54, page 3, lines 8-11, page 8, lines 16-22 and 29-32, page 9, lines 12-16, page 10, lines 31-36 and 49-54, and page 13, lines 1-6). Although there is no disclosure of an ink jet printer cartridge, it is clear that the ink jet printer of EP 732381 would intrinsically contain the ink in a cartridge.

The difference between EP 732381 and the present claimed invention is the requirement in the claims of (a) weight average molecular weight of polyurethane and (b) the amount of water-immiscible organic solvent and the viscosity of the ink.

With respect to difference (a), there is no explicit disclosure in EP 732381 of the weight average molecular weight of the polyurethane.

On the one hand, given the relationship between molecular weight and viscosity, i.e. as the molecular weight increases, the viscosity increases, it would have been obvious to one of ordinary skill in the art to choose polyurethane with molecular weight, including that presently claimed, in order to control the viscosity of the ink, and thereby arrive at the claimed invention.

On the other hand, Yang, which is drawn to ink jet ink, disclose the use of polyurethane with molecular weight of 5,000-50,000 in order to produce a flexible polyurethane binder which produces an ink with improved adhesion, drying, and rub resistance (col.2, lines 43-54 and col.3, line 64-col.4, line 12).

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Alternatively, Lent et al., which is drawn to ink jet ink, disclose the use of polyurethane which has weight average molecular weight of 4,000-12,000 (col.10, lines 52-56) wherein the polyurethane has good adhesion to substrate and serves to immobilize or increase the adhesion of the colorant to the substrate (col.8, lines 40-51).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use polyurethane with specific weight average molecular weight disclosed by either Yang or Lent et al. as described above in the ink of EP 732381 in order to produce an ink with improved adhesion, drying, and rub resistance, or alternatively, good adhesion to substrate, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that col.9, lines 7-14 of EP 732381 disclose that the water-immiscible solvent is used in order to control the viscosity of the ink. It would have been within the skill level of one of ordinary skill in the art to recognize that if the viscosity of an ink jet ink is too high, the ink would clog the printer nozzles, while if the viscosity is too low, the ink would print poorly on the page.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to control the amount of water-immiscible solvent in the ink of EP 732381 to amounts, including those presently claimed, in order to control the viscosity of the ink to levels suitable for use in ink jet printing, and thereby arrive at the claimed invention.

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6. Claims 1-2, 4-6, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knable et al. (U.S. 4,532,276) in view of either Yang (U.S. 5,825,391) or Lent et al. (U.S. 5,837,042).

Knable et al. disclose an ink comprising 10-40% polyurethane, 25-70% water, 2-40% colorant including dye, and up to 35% water-miscible organic solvent such as hexanediol and water-immiscible organic solvent such as ethyl acetate. It is further disclosed that the ink has viscosity of 10-200 cP (col.2, lines 28-29 and 52-63 and col.4, lines 15 and 19-20).

The difference between Knable et al. and the present claimed invention is the requirement in the claims of (a) specific type of polyurethane and (b) specific type of water-immiscible organic solvent.

With respect to difference (a), there is no explicit disclosure in Knable et al. of the specific type of polyurethane utilized.

Yang, which is drawn to ink jet ink, disclose the use of polyurethane obtained from reaction of polyols and diisocyanates wherein the polyurethane has molecular weight of 5,000-50,000 in order to produce a flexible polyurethane binder which produces an ink with improved adhesion, drying, and rub resistance (col.2, lines 43-54 and col.3, line 64-col.4, line 12).

Alternatively, Lent et al., which is drawn to ink jet ink, disclose the use of polyurethane obtained from reaction of diols and diisocyanates wherein the polyurethane has weight average molecular weight of 4,000-12,000 (col.10, lines 37-56) wherein the polyurethane has good

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adhesion to substrate and serves to immobilize or increase the adhesion of the colorant to the substrate (col.8, lines 40-51).

In light of the motivation for using specific type of polyurethane disclosed by either Yang or Lent et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polyurethane in the ink of Knable et al. in order to produce an ink with improved adhesion, drying, and rub resistance, or alternatively, good adhesion to substrate, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that col.4, line 16 of Knable et al. disclose that the water-immiscible organic solvent includes aromatic alcohols. One of ordinary skill in the art would have recognized that this broad disclosure of alcohols in Knable et al. encompasses the use of benzyl alcohol.

Therefore, in light of the above, and absent evidence to the contrary, it would have been obvious to one of ordinary skill in the art to choose alcohol, including benzyl alcohol as presently claimed, and thereby arrive at the claimed invention.

7. Claims 1-4, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Batlaw et al. (U.S. 5,429,841) in view of either Yang (U.S. 5,825,391) or Lent et al. (U.S. 5,837,042).

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Batlaw et al. disclose an ink comprising water, water-miscible solvent, polyurethane, water-immiscible solvent, and colorant including disperse dye (col.3, lines 58-62, col.4, line 3, col.6, line 48, and col.7, lines 12-50).

The difference between Batlaw et al. and the present claimed invention is the requirement in the claims of (a) specific type of polyurethane and (b) specific type of water-immiscible organic solvent.

With respect to difference (a), there is no explicit disclosure in Batlaw et al. of the specific type of polyurethane utilized.

Yang, which is drawn to ink jet ink, disclose the use of polyurethane obtained from reaction of polyols and diisocyanates wherein the polyurethane has molecular weight of 5,000-50,000 in order to produce a flexible polyurethane binder which produces an ink with improved adhesion, drying, and rub resistance (col.2, lines 43-54 and col.3, line 64-col.4, line 12).

Alternatively, Lent et al., which is drawn to ink jet ink, disclose the use of polyurethane obtained from reaction of diols and diisocyanates wherein the polyurethane has weight average molecular weight of 4,000-12,000 (col.10, lines 37-56) wherein the polyurethane has good adhesion to substrate and serves to immobilize or increase the adhesion of the colorant to the substrate (col.8, lines 40-51).

In light of the motivation for using specific type of polyurethane disclosed by either Yang or Lent et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polyurethane in the ink of Batlaw et al. in order to produce an ink with

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improved adhesion, drying, and rub resistance, or alternatively, good adhesion to substrate, and thereby arrive at the claimed invention.

With respect to difference (b), col.7, lines 28-29 of Batlaw et al. disclose that the water-immiscible organic solvent includes alcohols which have boiling point of 100⁰-260⁰ C. One of ordinary skill in the art would have recognized that this broad disclosure of alcohols in Batlaw et al. encompasses the use of benzyl alcohol.

Therefore, in light of the above, and absent evidence to the contrary, it would have been obvious to one of ordinary skill in the art to choose alcohol, including benzyl alcohol as presently claimed, and thereby arrive at the claimed invention.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lyon (U.S. 5,466,287) disclose an ink comprising acrylic polymer, ethanol, ethyl acetate, and colorant, however, there is no disclosure of water as presently claimed.

Lin (U.S. 4,531,976) disclose an ink jet ink comprising a combination of water-miscible and water-immiscible organic solvent. However, there is no disclosure of water-dissipatable acrylic polymer as presently claimed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie Shosho whose telephone number is (703) 305-0208. The examiner

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can normally be reached on Mondays-Thursdays from 7:00 am to 4:30 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Callie Shosho

8/7/01

Vasu Jagannathan
VASU JAGANNATHAN
SUPERVISOR, PATENT EXAMINER
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